

中文題目：地方性斑疹傷寒腦炎：病例報告及病歷回顧非典型感染相關的神經學表現

英文題目：Murine typhus encephalitis: a case report and review cases of atypical infections with neurological manifestations

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Introduction:

Murine typhus is an endemic rickettsial disease caused by *Rickettsia typhi* and transmitted by rat flea. As leptospirosis and other rickettsial diseases such as scrub typhus, Q fever, that are often called “atypical infections” in Taiwan, murine typhus mostly presents systemic and diverse symptoms. Neurological presentation is uncommon but may vary in severity from headache to meningoencephalitis. We report a case of murine typhus encephalitis, and review cases of atypical infections associated with suspected central nervous system (CNS) involvement from 2011 to 2022 in Kaohsiung Medical University Hospital.

Case presentation:

A 72-year-old female with hypertension presented with intermittent fever for eight days with progressive consciousness disturbance. She had impaired memory, slow response, frequent falling down, lethargy, and bizarre behavior. She denied respiratory symptoms nor abdominal discomfort. She denied occupational or exposure history other than planting in garden. Physical examination showed body temperature 39.3°C, heart rate 106/bpm, respiratory rate 18/cpm, and blood pressure 100/56 mmHg. Drowsier consciousness, E3V5M6, and neck stiffness were found. No focal weakness were shown in neurological exam. Laboratory test showed thrombocytopenia (platelet: $76 \times 10^3/\text{ul}$), elevated level of C-reactive protein (140 mg/L) and liver enzyme (GOT: 97 IU/L, GPT: 53 IU/L). The brain non-contrast computed tomography was unremarkable. Lumbar puncture revealed an opening pressure of 254 mmH₂O. Cerebrospinal fluid (CSF) studies showed no pleocytosis, sugar: 53mg/dl, protein: 19mg/dl. Japanese encephalitis, leptospirosis and rickettsial diseases including scrub typhus, murine typhus, Q fever were notified to Taiwan Centers for Disease Control. The patient was empirically treated with intravenous ceftriaxone. Doxycycline 100mg twice daily was added for suspect atypical infection. Fever subsided and consciousness improved over the next three days. The blood polymerase chain reaction (PCR) for *R. typhi* was positive. The patient made a complete recovery after discharge.

Discussion:

We enrolled the confirmed cases of leptospirosis, scrub typhus, murine typhus, Q fever in Kaohsiung Medical University Hospital from January 2011 to August 2022. A total of 122 cases (one patient had co-infection of leptospirosis and scrub typhus; one patient had co-infection of leptospirosis and murine typhus) were reported. Among them, six patients were suspected with CNS infection (one leptospirosis, two

scrub typhus, three murine typhus). The majority of CSF presented as aseptic meningitis. Most patients had initial reduced level of consciousness and fully recovered after treatment. However, one case of scrub typhus and one case of murine typhus developed dementia and delirium, respectively. Although neurological manifestation are uncommon in atypical infections, neurological sequelae remains the concern in patients with meningoencephalitis. Dittrich et al. reported scrub typhus, murine typhus and leptospirosis had accounted for one third of CNS infections in Laos. However, the main anti-rickettsial regimen, doxycycline was not included in the empirical treatment for CNS infection. Furthermore, the need of specific testings like microscopic agglutination test (MAT), immunofluorescent antibody assay (IFA) and PCR to confirm diagnosis may delay the appropriate treatment. We report this case to raise the concern of atypical pathogens in patients with neurological manifestations, especially in endemic areas.

Conclusion:

Although presenting with aseptic meningitis, leptospirosis or rickettsial diseases with CNS involvement should be considered in patient with reduced level of consciousness and in endemic areas.